

WHAT IS CLAIMED IS:

1. A method for fabricating a bipolar transistor, comprising:

a first step of implanting, along the normal direction of the principle surface of a first-conductive-type semiconductor single crystalline substrate, ions of a second-conductive-type first impurity into the semiconductor single crystalline substrate to form a
5 second-conductive-type collector layer;

a second step of implanting, along a direction tilted from the normal direction, ions of a second-conductive-type second impurity into the semiconductor single crystalline substrate at a higher injection energy than that in the ion implantation of the first step to
10 form a second-conductive-type buried collector layer in a lower portion of the collector layer; and

a third step of forming each of a first-conductive-type base layer and a second-conductive-type emitter layer in a predetermined region of a surface portion of the collector layer.

2. The method of claim 1, wherein an injection dose in the ion implantation of the second step is 10 times or more as much as that in the ion implantation of the first step, and
15 wherein an injection energy in the ion implantation of the second step is 6 time or more as much as that in the ion implantation of the first step.

3. The method of claim 1 or 2, wherein the third step includes
20 forming the base layer in a predetermined region of the surface portion of the collector layer,

forming, on the semiconductor single crystalline substrate in which the base layer
25 is formed, a mask having a first opening portion through which an emitter-layer-forming

region of the base layer is exposed and a second opening portion through which a collector-contact-layer forming region is exposed, and

forming, using the mask, the emitter layer in part of the base layer located under the first opening portion simultaneously with a second-conductive-type collector contact layer in part of the collector layer located under the second opening portion.

4. The method of claim 3, wherein the collector contact layer is formed so as to surround the base layer.

10 5. The method of claim 1 or 2, wherein the method further includes between the second and third steps, the step of implanting ions of a second-conductive-type third impurity into the semiconductor single crystalline substrate to form a second-conductive-type inversion preventing layer in the surface portion of the collector layer,

wherein an injection dose in the ion implantation of the step of forming an inversion preventing layer is smaller than that in the ion implantation of the first step, and

15 wherein an injection energy in the ion implantation of the step of forming an inversion preventing layer is smaller than that in the ion implantation of the first step.

6. The method of claim 1 or 2, wherein after the third step, thermal treatment is performed to the semiconductor single crystalline substrate to activate the collector layer, the buried collector layer, the base layer, and the emitter layer.